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THE EFFECTS OF PICTURE ACTIVITY SCHEDULES ON TRANSITION TIMES IN AN INCLUSIVE PRESCHOOL CLASSROOM

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THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Science in Education
in the College of Education at the University of Kentucky

By

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ABSTRACT OF THESIS

THE EFFECTS OF PICTURE ACTIVITY SCHEDULES ON TRANSITION TIMES IN AN INCLUSIVE PRESCHOOL CLASSROOM

This study determined the effectiveness of using picture activity schedules with preschoolers who exhibited disruptive behaviors in an inclusive setting during transition times in a public preschool. The participants in this study were three male and one female student, ages 3 years to 5 years, who were enrolled in an inclusive public preschool. All children are Caucasian. Three of the children had an individualized education plan including goals for speech and social-emotional concerns. One child was typically developing and did not have an individualized education plan. The study method used a single-subject withdrawal design (ABAB). The results confirmed that the use of picture activity schedules decreased the mean duration of transitions and the duration returned to pre-intervention levels when picture activity schedules were removed for two of the four children.

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KEYWORDS: Transitions, picture activity schedule, preschool, behavior, picture cues

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THE EFFECTS OF PICTURE ACTIVITY SCHEDULES ON TRANSITION TIMES IN AN INCLUSIVE PRESCHOOL CLASSROOM

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Section 1: Introduction

Many adults use a variety of visual supports in their daily life such as calendars, watches, lists, as well as using technology to help keep them on track (Meadan, Ostrosky, Triplett, Michna, & Fettig, 2011) Children could also benefit from the use of visual supports, especially when they have difficulty understanding and processing verbal language. Children with disabilities often have behavioral issues due to their inability to process and understand verbal language. (Breitfelder, 2008) Behavioral issues can impact many areas of a child's day, especially transitioning between activities. Teachers should have a comprehensive approach to addressing challenging behaviors, as well as strategies to prevent challenging behavior from happening (Hemmeter, Ostrosky, & Corso, 2012) This study will determine the effects of using a picture activity schedule to reduce transition times for children with and without disabilities.

Disruptive Behavior

There are many reasons why a child might display challenging behaviors. Hemmeter et al. (2012) suggested that "children's behavior typically serves the purpose of getting something (e.g., toy, attention) or avoiding something (e.g., an activity they do not like, a child with whom they do not want to play)" (p. 43). Some children have difficulty effectively communicating their needs appropriately, so they may display challenging behaviors (Hemmeter et al., 2012) Many children, including those with autism, Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder (ADD/ADHD), developmental disabilities, learning disabilities and speech/language delays, can display behavioral issues due to the inability to process and understand verbal language (Breitfelder, 2008). Some of these behavioral difficulties include screaming,

running away, refusing to comply with the task direction, hitting, and kicking. Other children's behaviors can be linked back to boredom, anxiety, frustration, or confusion (Hemmeter et al., 2012)

Behaviors are sometimes related to the child being in a group setting for the first time, not knowing the expectations for the activity or setting, or not having the social skills needed to manage the situation (Hemmeter et al., 2008). Some children can learn these expectations by observing and participating in them. Other children need a more individualized approach which includes direct instruction and may include supports such as picture schedules, visual supports, peer buddies and other adult assistance. When children know what is expected of them and provided with a supportive environment, challenging behaviors are less likely to occur (Hemmeter et al., 2012).

The Importance of Transition Times

A transition is a time of the day when children move or change from one activity to another. Some examples include arriving in the classroom, moving from morning meeting to centers, changing from a preferred to non-preferred activity, or leaving the playground to come inside. According to Hemmeter et al., (2008) "challenging behavior is more likely to occur when there are too many transitions, when all the children transition at the same time in the same way, when transitions are too long, and children spend too much time waiting with nothing to do, and when there are not clear instructions" (p. 18).

Since children spend more than 50% of their early childhood education time performing routines activities (such as meal time, washing hands) and in transition

between activities (Malenfant, 2006), problem behaviors during transitions can impact the effectiveness of teacher instruction and disrupt other children's activities. Difficulty with transitions can also limit a student's ability to independently complete tasks across environments (Banda, Grimmett, & Hart, 2009).

Many children need a schedule in place so they have a clear understanding of the beginning and end of the task at hand. The use of visual schedules gives the child a sense of time as well as predictability (Breitfelder, 2008). Some children take longer to process information. When a direction is given without a visual cue, the child might not entirely understand what is being asked of him. Some children move between care arrangements such as preschool, child care and home care, during the day. Differences in routines and how transitions are handled in each of these settings could cause confusion with the child. The child might need additional cues to understand and process the information being given to him or her (Hemmeter, et al, 2008). Children should also be taught expectations for each transition. Some children may need to hear and see modeling of the expectations multiple times or through different means in order to understand what they are being asked to do (Sandall & Schwartz, 2008).

Picture Activity Schedules as a Tool to Help Transitions

According to Hodgon (1995), there are four reason to use visual cues in school and home environments: (1) they increase children's ability to know what to do and to repeat the steps, (2) they encourage independence in routines, (3) they provide children with structure and reliability, and (4) they create a sense of orderliness which helps stabilize the environment for children. One of the most effective ways to encourage

children to process language is through the use of visual supports. Breitfelder (2008) defined a visual support as "a visually perceived stimulus that can assist an individual in comprehending information or demands" (p. 3).

A picture activity schedule is a type of visual support that combines photographs, images, or drawings in a sequential format to represent a targeted sequence of the student's day (Banda, Grimmett, & Hart, 2009). Hodgdon (1995) described visual supports as tools used to help compensate for a child's difficulties in auditory processing, attention, sequencing, and organization.

A study by Bryan and Gast (2000) evaluated on-task and on-schedule performance of 4 students with autism ages 7 to 9. The research question addressed two areas: (1) Would a package of both a picture activity schedule as well as graduated guidance teach the students with autism independence in on-task and on-schedule behaviors? and (2) will those behaviors generalize to novel activities?

The students were served half-time in a resource classroom and half-time in a general education classroom with special education support staff. The study took place during a 45-minute language arts block in the resource classroom. Each student had their own picture activity schedule placed in a small photo album. The album contained four line drawings of the academic activities available during the learning block. The teacher would begin with a standard verbal prompt indicating it was time to begin working. Each student was told which four activities they were to complete. Statements of praise were delivered on a 3-minute variable time schedule for on-task and on-schedule behaviors. The teacher moved around the classroom and the observers collected data during the

session. The investigators used a single-subject withdrawal design (ABAB) to evaluate student behaviors without and with the picture activity schedules. The teacher also used a graduated guidance system to teach the students how to use the picture activity schedules.

Results of the study confirmed that students quickly learned how to use the picture activity schedules using graduated guidance. They maintained high levels of independence with tasks using the picture activity schedule book, and behaviors decreased when the materials were scheduled for the children. Prior to the study the children were heavily dependent on adult prompting during literacy-based activities. After using picture activity schedules for the study, the children requested to use their picture activity schedules during other activities during the day, showing an enthusiasm and motivation for independence in their activities.

Dettmer et al. (2000) examined the effects of a combination of picture activity schedules, subschedules, timers and boxes to signify an activity was finished to facilitate the transitions of two children with autism. The two participants were boys ages 5 and 7 who were diagnosed on the autism spectrum. Observations and interviews with caregivers confirmed that both boys struggled with making transitions. Some of the transitions included activities in the community such as going out to eat at restaurants, and transitions between work time and free time in the home-based school setting. The researchers used a single subject withdrawal design (ABAB) to evaluate the effectiveness of using the package of supports then withdrawing the supports. During the baseline conditions, interventions typical of the school day were used, including verbal and physical prompts. No visual supports, including picture activity schedules, were used during baseline. During intervention conditions, the picture activity schedules were

introduced to the participants. Observers used frequency counts to record the number of prompts given by the caregiver and removals from the situation. They also used a stopwatch to collect data on the duration of the transition, beginning with the caregiver's task direction and ending when the child began to move toward the activity.

For Jeff, the 7-year-old, two types of visual supports were introduced. A schedule of daily activities that attached to the caregiver's dashboard, and a second portable schedule that was small enough for the caregiver to carry throughout the day. The pictures in the portable schedule were the same and in the same order as the schedule in the car. When the caregiver arrived at Jeff's home, she showed him the portable schedule and the picture representing the first activity and simultaneously gave him a verbal cue (for example, "time to go to the library"). When the activity was finished, the caregiver again showed Jeff the portable schedule opened to the current activity, pointed to the picture, and said "finished." Then showed him the picture for the next activity. This routine was continued in the car and throughout the day at each community stop.

Results show an immediacy of effect when the intervention was introduced. There was a therapeutic trend showing a decline in transition times when Jeff used the picture activity schedule package. When the package was taken away, a contra therapeutic trend was noted. Upon reintroduction of the intervention, a decline in transition times was again proven. In addition, Jeff was removed 14 times in baseline then only twice once intervention was initially introduced. He continued with two removals in the second baseline condition then required no removals in the final intervention condition.

Josh, age 5, showed self-stimulatory behaviors when he was asked to transition from a preferred activity. He had no experience using picture activity schedules prior to this study. Josh participated in the study during an at-home educational program. A package of three visual supports were introduced simultaneously. First, a picture activity schedule affixed to a long piece of foam core board was used. On it were line drawings of each of Josh's daily activities. Second, a subschedule was used using small notecards with specific task instructions written on them. A "finished box" made from a coffee can was presented as a way to signify the activity was finished. Third, a visual timer was placed where Josh could see it. The timer showed time remaining as a red field that got smaller as time wound down.

At the beginning of each session, the caregiver reviewed the schedule with Josh and explain the pictures. When it was work time, the caregiver pointed to the picture and said "It's time for work" then used the subschedule to read the steps aloud to Josh. When he was finished with each task, he put the subschedule card into the coffee can. When all tasks were completed, the caregiver pointed to the work picture and said "finished" then "time for free time" while pointing to the free time picture. The caregiver set the visual timer for 10 minutes giving Josh instructions that "when the red is gone, free time is over." Once free time was over, the caregiver again pointed to the visual schedule and began the cues as before.

Josh showed a dramatic therapeutic trend once the package of visual supports was introduced. He returned to baseline when the package was withdrawn then again showed a sharp decline in transition times once it was introduced again. In addition, his removals

were at higher levels during both baseline conditions and decreased during intervention conditions.

For both participants, the introduction of the picture activity schedules resulted in a decrease in overall transition times. It was also noted that one of the participants who mainly verbalized with echolalia began speaking in complete sentences when using the picture prompts. After the study was completed, one of the parents implemented a similar strategy throughout the day and reported that the use of the strategies reduced time between transitions as well as increased independence for the child.

Dooley, Wilczenski, & Torem (2001) studied the effects of using part of the Picture Exchange Communication System (PECS; Bondy & Frost, 2002) in a behavior intervention plan to reduce the disruptive and aggressive behaviors during transitions a child exhibited during transitions throughout the day at school. The subject was a 3-year-old diagnosed with pervasive developmental delay (PDD) and he exhibited disruptive and sometimes dangerous behaviors such as screaming, hitting, kicking and biting. The researchers observed him for 17 days to collect data that would be used to complete a functional assessment of behavior. Results from this observations showed that the child only showed these disruptive behaviors during transition times during the school day. His parents reported that similar behaviors occurred at home during transitions as well. The researchers used a combined intervention of a PECS-based picture activity schedule paired with a pretzel reward. When the child arrived at school each day, the teacher and child reveiwed the picture activity schedule together. The child then removed the first picture and moved to his first activity. When the activity was completed, the child deposited the picture into a bin and the pretzel reward was given to him. Classroom

transitions were signaled by flipping the lights on and off. When the child saw this cue, he knew it was time to return to his picture activity schedule and choose the next activity card. After six days, the pretzel reward was removed and the intervention continued as it did before. The results showed that once the intervention was introduced, there was a significant therapuetic trend in the data. Problem behaviors decreased and compliance in transitions increased. After 17 days, the child was monitored less frequently but still showed the decrease in problem behaviors and increase in compiance with transitions.

Most recent research studies using picture activity schedules are focused on the efficacy of using the schedules with those diagnosed with autism. There is little research showing the effects of using picture activity schedules on children in preschool classrooms who are not diagnosed with autism. This study adds to the the literature on the use of picture activity schedules and transitions by attempting to prove that picture activity schedules can be used successfully for all children including those without developmental delays as well as those with speech and language delays and/or social-emotional delays. The research question is: Is there a functional relation between the use of picture activity schedules and the duration of transition in preschoolers with and without disabilities?

Section 2: Research Question

The research question asks the following: Is there a functional relation between the use of picture activity schedules and the duration of transition in preschoolers with and without disabilities?

Section 3: Methods

Participants

Investigator.

The author served as the investigator. She earned her certification in Interdisciplinary Early Childhood Education in 2011 and has a Kentucky teaching certificate. This was her first year teaching in the public preschool. Prior to working as a public preschool teacher, she was an early childhood teacher at a private preschool in Louisville, KY for two years. Before that, she was a Developmental Interventionist for Kentucky's First Steps program for three years and worked individually with children ages birth to three -years-old with developmental delays. She also has a 19-year-old daughter with Down syndrome.

Levi: Student participant 1.

Levi was 5 years 6 months old. He was dismissed from a private preschool for behavior difficulties. On the Developmental Indicators for the Assessment of Learning, fourth edition (DIAL-4; Mardell & Goldenber, 2011), he scored in the 5th percentile on Self-Help and in the 3rd percentile on Social-Emotional. A score below the 9th percentile indicated the need for further screening in these areas. He was premature and born at 34 weeks gestation with breathing complications. His mother described him as happy, athletic, friendly, and artistic. She also noted that he hits others, was easily distracted and overexcited and was impulsive. In the classroom he struggled with peer interactions and transitions. According to anecdotal data taken by the investigator, Levi demonstrated a great deal of variability among his ability to follow directions to transition with only

verbal cues and visual cues including hand gestures with scores ranging from 25% to 90%. Over an average of 12 days, Levi was able to follow directions with only verbal cues and hand gestures 60% of the time. Levi has a great deal of difficulty with transitioning from preferred activities to non-preferred tasks. He often screamed, cried, and pushed others or threw objects when he became upset. He averaged about 5-10 minutes to calm down and be redirected. His behaviors were sometimes predictable while other times he became upset about something that often did not make sense to others. Levi displayed these behaviors when he did not get what he wanted or when asked to do something he did not want to do. These behaviors seemed to be impacting his learning as well as the learning of other students. When he was requested to transition, and he was not ready to transition, he often screamed and ran to the door. Due to Levi's behavior patterns, a school psychologist was brought in to observe and further evaluate Levi since he will be transitioning to kindergarten in the Fall. The school psychologist administered the Wechsler Preschool and Primary Scale of Intelligence – Fourth Edition (WPPSI-IV; Wechsler & Psychological Corporation, 2012). The WPPSI-IV is an individually administered, comprehensive clinical instrument for measuring the intelligence of children aged 2 years 6 months through 7 years 7 months. Levi was administered the six core subtests in order to obtain a full-scale IQ (FSIQ). On this administration of these six subtests, his overall thinking and reasoning abilities exceeded those of approximately 98% of his peers (FSIQ=132; 90% confidence interval=126-135). His overall FSIQ is classified in the Upper Extreme range. Levi's subtest scores contributing to the WPPSI-IV all fell above the average range. He demonstrated above average verbal

comprehension skills with above average general information and abstract verbal reasoning skills.

The Adaptive Behavior Assessment System –Third Edition (ABAS-3; Harrison & Oakland, 2015) provides a comprehensive, norm referenced assessment of adaptive skills of individuals who are school aged to adulthood. The primary purpose is to assess daily adaptive skills necessary to function effectively in their environments, given the typical demands placed on individuals the same age. Levi's mother and teacher each responded to the appropriate ABAS-3. Both raters reported General Adaptive Composites which fell in the Average range. They both noted average practical skills and below average social skills. His teacher noted average conceptual development while his mother noted low average skills. According to both parent and teacher reports, his weakest adaptive area was noted to be within the area of social functioning. His teacher noted that he is a bright child who can read independently and can carry on conversations. He can attend to tasks and problem solve. He struggles socially and emotionally when he is not chosen first or chosen for a job. He will scream, cry and/or flee. He is easily scared to the point of tears or escaping. Even when given a warning that something may happen or change he will still get upset.

Levi's social and emotional functioning was measured using the Behavior Assessment System for Children-Third Edition (BASC-3; Reynolds & Kamphaus, 2015). The BASC-3 is an integrated system designed to facilitate the differential diagnosis and classification of a variety of emotional and behavioral disorders of children. This system is also used to aid in the design of behavior plans. His mother's ratings indicated no significant behavioral difficulties in the home setting. She did not report any

externalizing or internalizing problem behaviors. She also noted average adaptive ratings. She did note at-risk concerns with adaptability and social skills while activities of daily living and functional communication fell in the average range. The investigator's ratings indicated significant externalizing problem behaviors. She noted at-risk concerns on hyperactivity and significant concerns on the aggression subscale. Specifically, she noted he often disrupted the play of others, was overly aggressive, annoyed others on purpose, and defied teachers. He almost always lost temper too easily and argued when denied his own way. She noted at-risk internalizing problems. Anxiety was noted to fall in the at-risk range, while depression fell in the clinically significant range. She noted additional concerns with atypicality and withdrawal which each area falling in the significant and at-risk range respectively. The ratings suggested that Levi was displaying many more problem behaviors than typical children his age. These behaviors interfered with his ability to successfully access the preschool curriculum and disrupted his learning as well as that of other children. The investigator noted overall average adaptive skills but noted at-risk concerns with his adaptability.

Eden: Student participant 2.

Eden was 5-years-old and qualified for preschool services due to being at risk for income. She did not have an Individualized Education Plan. Eden was assessed using Teaching Strategies Gold and scored within her developmental age range in the social-emotional area, however she had difficulty following the routine and required multiple reminders to stay on task. She was understood by most people at school and understood what others were saying. Eden showed empathy to others and was concerned about her friends' feelings. She was also inquisitive and sought to understand how things worked in

her world. Eden seemed to be easily distracted and lost focus quickly. Transitions were consistently difficult for her due to a perceived lack of focus. When given a direction, Eden would begin the transition but was distracted by others or her environment very quickly. She required more than three verbal or physical prompts for each of her five most difficult transitions. When you asked her if she remembered what she was supposed to do, she often replied "no." She frequently forgot what was asked of her if she didn't immediately make the transition.

Scott: Student participant 3.

Scott was 5 years old and qualified for preschool for speech and language services for a fluency disorder which was judged to be in the severe category, according to a written communication report in his file. He had an individualized education plan that focused on his fluency disorder. He received speech and language therapy services for 30 minutes one time a week in a resource setting.

Scott was a leader in the classroom and is inquisitive and talkative. He struggled with waiting his turn and asked many questions about the classroom routine daily, even though when he was questioned, he verbalized what came next. He had difficulty with transitions, if they did not happen on his time schedule, resulting in longer transitions. Negative behaviors such as refusal to move, name calling to teachers, and occasional kicking and hitting teachers were noted during transitions.

Lucas: Student participant 4.

Lucas was 3 years 10 months old. The Goldman Fristoe Test of Articulation – 3 (Goldman & Fristoe, 2015) was administered and yielded a standard score of 58 which

was less than the first percentile. The Preschool Language Scales, Fifth Edition (PLS-5) (Zimmerman, Steiner, & Pond, 2011) was administered and yielded the following standard scores (SS): Auditory comprehension (receptive language): 81 (tenth percentile); expressive language: 72 (third percentile); and total language: 75 (fifth percentile). Lucas loved to come to school and had lots to say however he was very difficult to understand, not only to teachers and peers but to his parents as well. He was an active little boy who had difficulty focusing on the task at hand and keeping a calm body during small and large group learning times. Transitions were difficult for him and he required numerous verbal, visual and physical reminders to follow through with classroom transitions. After he was given a task direction, he exhibited behaviors such as refusal to move, running around the classroom, and hiding under the table.

IOA reliability data collector.

The classroom assistant was trained to take IOA reliability data. She received her Bachelor's degree in Recreational Therapy in 2000. She had 6.5 years of experience in the public preschool classroom as a classroom assistant.

Procedural reliability data collector.

The speech-language pathologist received her Bachelor's in Elementary Education in 1991 then received her Master's in Communication Disorders in 1994. She spent four years in Kentucky's First Steps early intervention program, worked eight years in public elementary schools and has been at the public preschool for 12 years.

Setting

This study took place at an inclusive publicly funded preschool in a state in the southeast part of the United States. The inclusive preschool consisted of two sessions, one in the morning from 7:30 a.m. -10:30 a.m. and one in the afternoon from 11:15 a.m - 2:15 p.m. The children attended school Monday through Thursday. The study took place in the classroom, the communal bathroom down the hall from the classroom, and the playground or the multi-purpose room, depending on the weather. The classroom is 9.144 m x 9.144 m. The classroom had the following centers available for children to participate in: dramatic play, writing, relaxation station (quiet calming area), technology (computer and iPad), reading, math, art, science, sensory bin and blocks. There was a single-person bathroom in the classroom with a changing table. The communal bathroom down the hall had 2-4 stalls or a combination of stalls and urinals with 3 sinks for handwashing. The playground had a mulched area with climbing equipment, see-saw, water table, and two small picnic tables. It also had a grassy area as well as a concrete area for riding bikes.

Materials

Each student had an individual picture chart measuring 215.9 **x** 279.4 mm. that ran vertically on the page. On the chart was a chronological list of the five transitions with which the child typically struggled. Each visual schedule included a picture icon on the left with a blank space to the right for the child to move the picture to once the transition is complete. The picture icons were 38.1 x 38.1 mm., laminated, and backed with Velcro.

A stopwatch which recorded seconds was used to time the duration of the transition. Data collection sheets were used to record the duration each transition.

Experimental Design

A single subject withdrawal design (ABAB) (Gast, 2010) was used to evaluate the effectiveness of picture activity schedules to decrease the time it took for the children to make transitions throughout the day. This experimental method allowed the investigator to measure the effects of using the picture activity schedules through the withdrawal and reinstatement of the intervention. According to Gast (2010) "the A-B-A-B design permits a clear and convincing demonstration of experimental control because it requires the repeated introduction and withdrawal (or reversal) of an intervention" (p. 248). Gast also noted that it is the "simplest, most straightforward evaluation paradigm for evaluating causality with behaviors that are reversible" (p. 248).

Experimental control for the A-B-A-B design was achieved when a therapeutic trend was seen after the intervention was introduced and a contra therapeutic trend was noted after the intervention was withdrawn. Internal validity was strengthened when the degree of change between the conditions was immediate and abrupt. External validity can only be achieved with this type of design when the study and results are replicated with similar participants under similar conditions. (Gast, 2010).

This study occurred in 4 conditions consisting of five days each. Due to time restrictions with this study, the investigator moved between phases after five days regardless of whether data were stable.

Procedures

Screening Procedures. Prior to the study, the four children were observed during daily transitions and anecdotal notes were taken over a period of three weeks. The notes were evaluated, and the investigator determined the five most difficult transitions for each of the children. Table 1 shows the results of these observations.

Table 1: Five Most Difficult Transitions for Each Child

Levi	Eden	Scott	Lucas
Enter room in morning	Enter room in morning	Enter room in morning	Meal time to recess
Carpet to meal time	Meal time to recess	Meal time to recess	Recess to line up
Bathroom after recess	Recess to line up	Storytime	Bathroom after recess
Storytime	Bathroom after recess	Center time clean up	Center time clean up
Carpet to dismissal	Carpet to dismissal	Carpet to dismissal	Carpet to dismissal

Baseline Procedures. Phases one and three were baseline conditions. During the baseline conditions, the interventions remained the same including the use of verbal and physical prompts. A verbal prompt was any verbal instruction given by the investigator or other adults in the classroom such as “Time to line up,” “Go to your tables for breakfast,” “Please wash your hands,” etc. A physical prompt was any physical assistance the investigator or other adult in the classroom used to help the child transition to the next activity. The picture activity was not used during baseline. Both baseline conditions consisted of five sessions each. A session is defined as one class day. Data was stable before introducing the independent variable.

Data were collected on the duration of each transition. The investigator gained joint attention with the participant and verbally cued the child using the antecedent scripts shown in Table 2. The investigator began the timer once the task direction was delivered. After 3 s, if the child had not begun the transition, the teacher again delivered the verbal task direction. If after another 3 s the child still did not begin the transition, the investigator gave the child a physical prompt. The investigator stopped timing the transition when the child had successfully completed the transition according to classroom expectations (see Table 2). Verbal praise was also given to the child when they completed the transition, even when multiple cues were delivered. The duration in seconds was written next to the corresponding transition. After all data was collected for the day, the mean duration per occurrence and range of durations was calculated and recorded. The mean duration per occurrence was used for purposes of evaluating the effectiveness of the independent variable.

Intervention Procedures. Phases two and four were intervention conditions. Both intervention conditions consisted of five sessions each. They used during the five selected transitions for each participant. On the final day of baseline, the picture activity schedules were shown to each participant individually before they left for the day. The investigator showed them the icons and explained that the next day when they came to school, they would use their schedule to help them remember what to do. The investigator reminded them of the expectations for each transition. The expectations were the same as they had been all school year, so the children were already familiar with them. The participants had the opportunity to try moving the icon to the "finished" side to

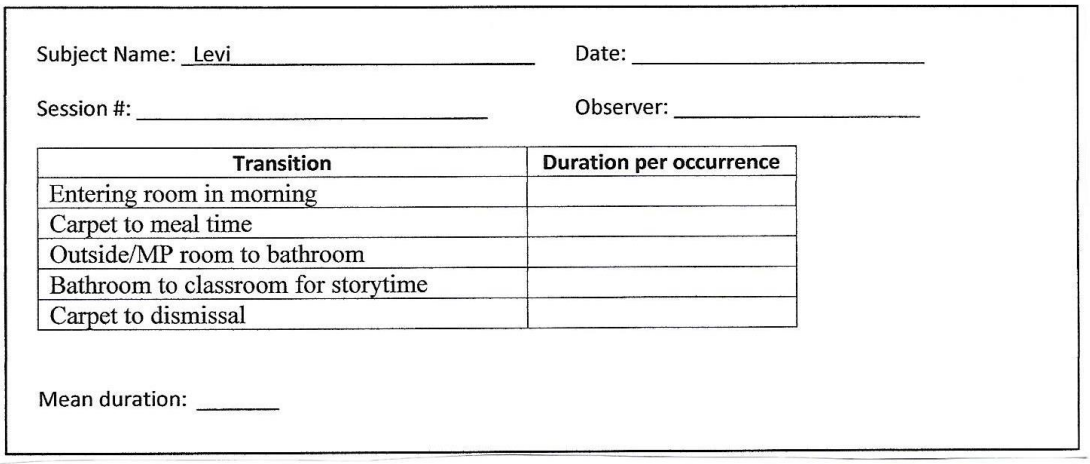
practice. The investigator made sure the child understood what was said and more explanation

The investigator gained joint attention with the participant and verbally cued the child while showing him/her the picture on the schedule that corresponded to the transition. The task directions were delivered according to the antecedent scripts shown in Table 2. The investigator began the timer once the task direction was delivered. After 3 s, if the child had not begun the transition, the teacher again delivered the verbal direction and showed the child the picture activity schedule. If after another 3 s the child still did not begin the transition, the investigator gave the child a physical prompt. The investigator stopped timing the transition when the child had successfully completed the transition according to classroom expectations (see Table 2). Verbal praise was also given to the child when they completed the transition, even when multiple cues were delivered. Once the child completed the transition and reached the destination, the investigator stopped the timer and cued the child to move the corresponding picture from the *To Do* side to the *Finished* side of the chart. The investigator also used descriptive verbal praise such as “Great job walking to circle!” or “Thank you for listening and throwing your paper towel away” or other verbal praise appropriate to the transition when the child begins the transition promptly.

The duration in seconds was written next to the corresponding transition. After all data was collected for the day, the mean duration per occurrence and range of durations was calculated and recorded. The mean duration per occurrence was used for purposes of evaluating the effectiveness of the independent variable.

Data were collected using a duration-per-occurrence tracking form. Each child's data sheet was customized with his or her five transitions that were evaluated. Figures 1 through 4 show each child's specific data sheet.

Figure 1: Levi's Duration per Occurrence Data Collection Form



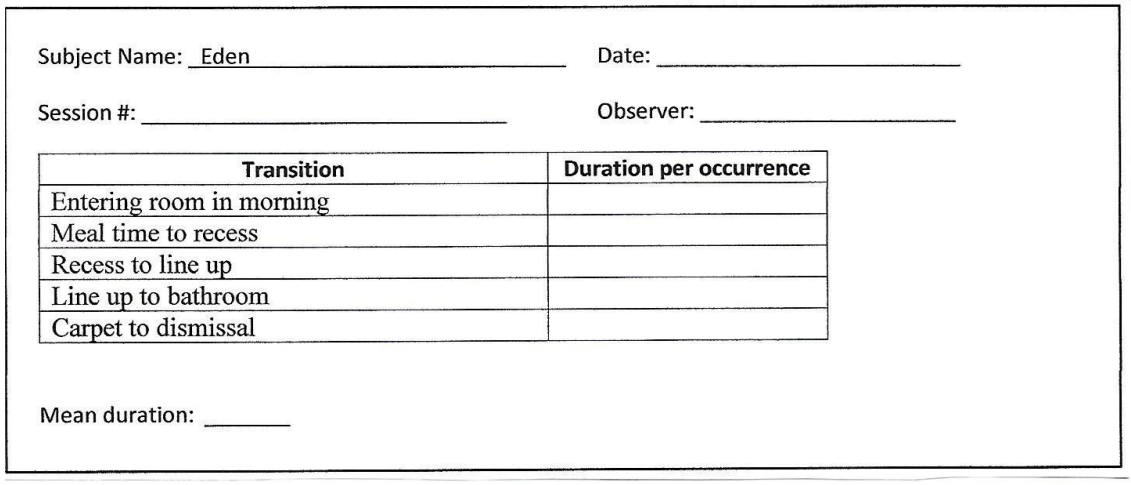
Subject Name: Levi Date: _____

Session #: _____ Observer: _____

Transition	Duration per occurrence
Entering room in morning	
Carpet to meal time	
Outside/MP room to bathroom	
Bathroom to classroom for storytime	
Carpet to dismissal	

Mean duration: _____

Figure 2: Eden's Duration per Occurrence Data Collection Form



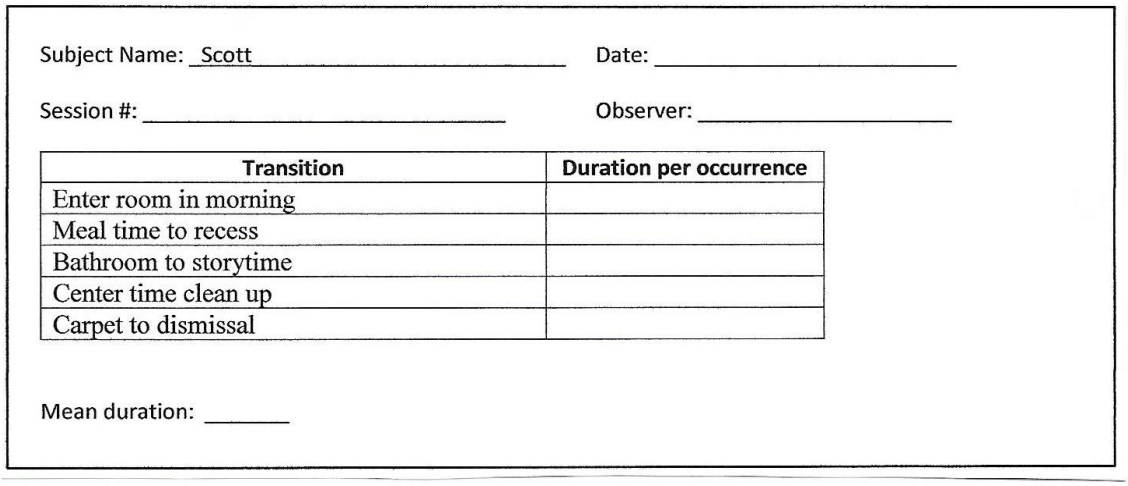
Subject Name: Eden Date: _____

Session #: _____ Observer: _____

Transition	Duration per occurrence
Entering room in morning	
Meal time to recess	
Recess to line up	
Line up to bathroom	
Carpet to dismissal	

Mean duration: _____

Figure 3: Scott's Duration per Occurrence Data Collection Form



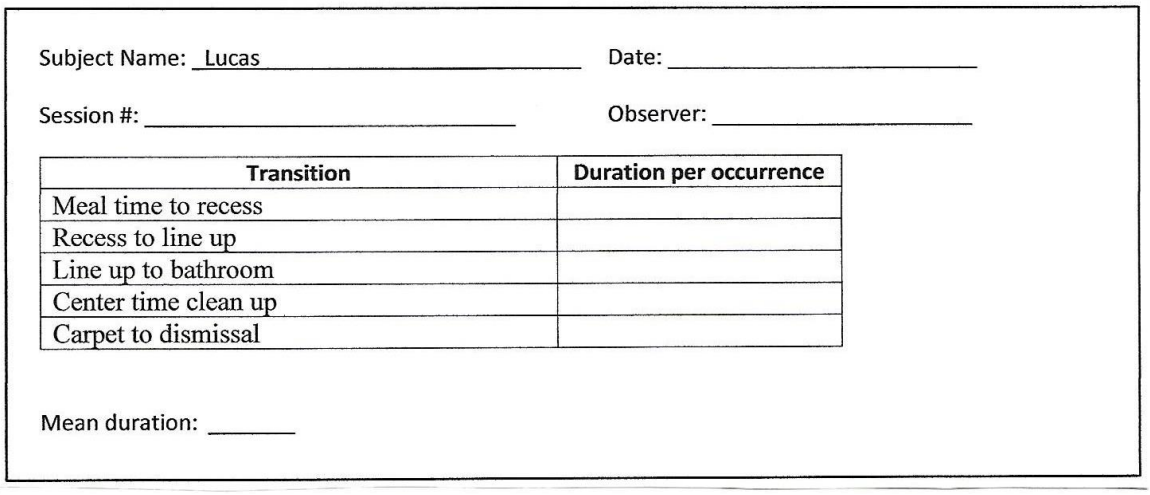
Subject Name: Scott Date: _____

Session #: _____ Observer: _____

Transition	Duration per occurrence
Enter room in morning	
Meal time to recess	
Bathroom to storytime	
Center time clean up	
Carpet to dismissal	

Mean duration: _____

Figure 4: Lucas' Duration per Occurrence Data Collection Form



Subject Name: Lucas Date: _____

Session #: _____ Observer: _____

Transition	Duration per occurrence
Meal time to recess	
Recess to line up	
Line up to bathroom	
Center time clean up	
Carpet to dismissal	

Mean duration: _____

Table 2: Antecedent Scripts and Desired Behaviors per Transition

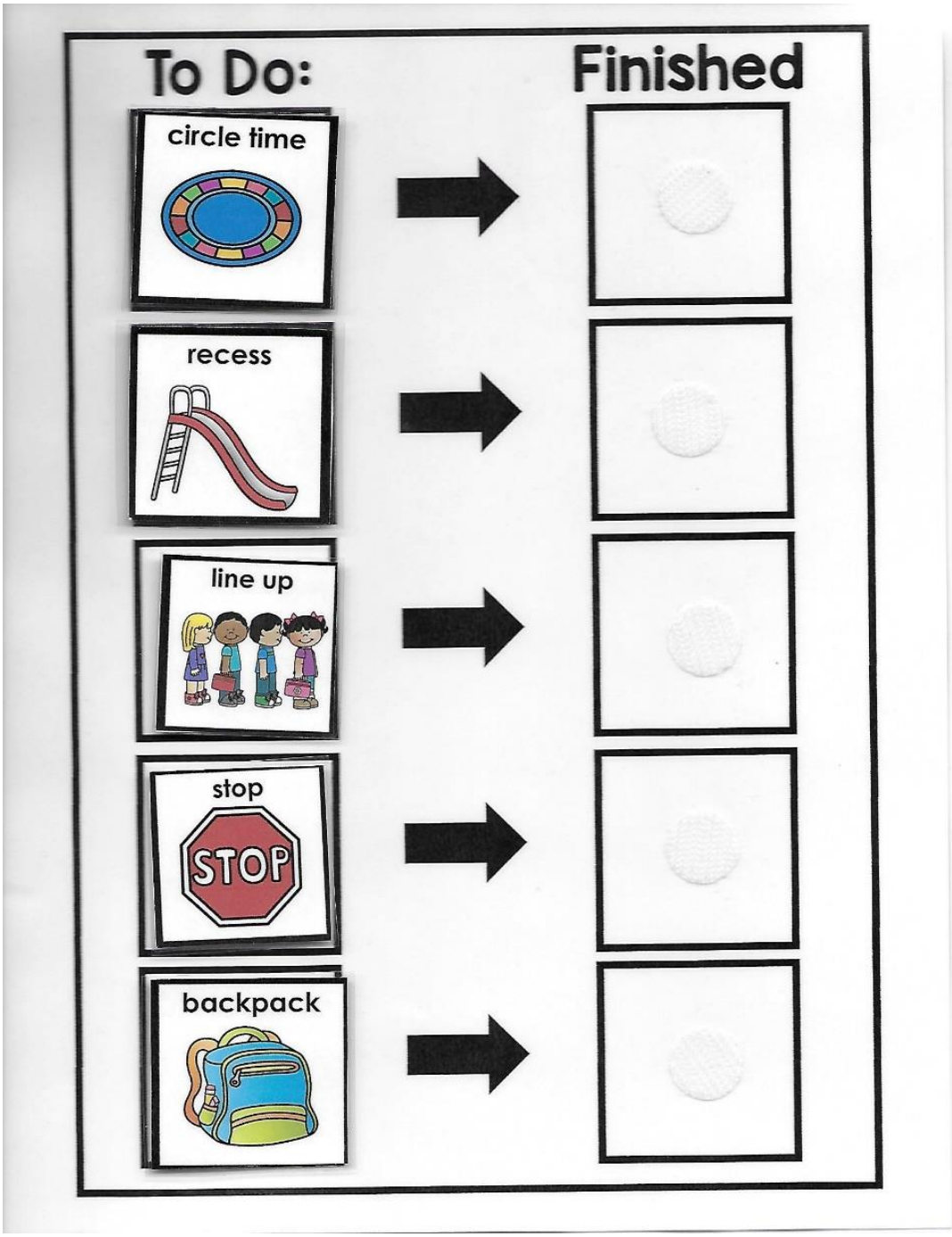
Transition	Antecedent Script	Desired Behavior Definition
Entering room in morning	"Good morning! Let's put your coat and backpack away."	Child hangs up coat, takes folder from backpack and places it in the cubby and hangs up the backpack.
Carpet to meal time	"It's time for breakfast/lunch"	Child moves from carpet and is seated in his/her mealtime seat.
Meal time to outside/multi-purpose room	"Put on your coat and line up on the orange line."	Child clears mealtime dishes, puts on coat (if needed) and lines up on orange line in classroom.
Outside/MP room to line up	"Ms. Ray's room, time to line up!"	Child stops playing, moves to the sidewalk where we line up, and takes his/her place in line.
Hallway bathroom transition	"Wash your hands and get a drink. Then line up please!"	Child enters bathroom and washes and dries hands, throws away paper towel, gets a drink from the water fountain then lines up on the orange line.
Enter room to large group literacy activity	"Take your seat on the carpet for story time."	Child enters room, goes to his/her spot on the carpet and sits down.
Center clean up to carpet for wrap up	"Time to clean up then meet me on the carpet."	Child stops his/her activity, cleans up, then takes spot on carpet.
Carpet to dismissal	"Listen for your name to get your backpack then go to the orange line."	Child hears their name, leaves the carpet, gets backpack and coat then lines up on orange line.

Independent Variable

The independent variable was a 215.9 x 279.4 mm. chart with clip art style pictures of each transition placed in chronological order in a vertical line on the left side of the page. There was a vertical strip of Velcro to hold the pictures. The number of

transitions was the same for each child; however, each child had a chart customized to the five most difficult transitions for him or her. An example of one of the picture activity schedules is shown in Figure 5.

Figure 5: Sample of Picture Activity Schedule



Reliability

Interobserver agreement.

Interobserver agreement (IOA) data were collected by a trained teacher's assistant in at least 20% of the transitions per child and at least once a week. Target IOA is 90% with an acceptable level of 80%. The trained teacher's aide used the same data recording sheets as the investigator and the reliability were collected using the point by point across all transitions per child.

During baseline conditions, all children's transitions reached the target IOA of 90% with a range of 90-96% and a mean IOA of 93.5%. During intervention conditions, all data achieved the target of 90% with a range of 94-98& and a mean IOA of 96%.

Procedural reliability.

Procedural fidelity was measured by a trained observer who was a speech language pathologist who worked in the room during the week. She observed the investigator and collected data on the number of times the investigator followed the written procedure. The formula for calculating procedural reliability is to divide the number of observed behaviors by the number of planned behaviors and multiply by 100. Procedural reliability data were collected during 20% of the sessions for each child and at least once a week. The data collection form is shown in Figure 6 for baseline condition and Figure 7 for intervention condition.

Figure 6: Procedural Fidelity Form for Baseline Condition

Child Name:	1	2	3	4	5
1. Establish joint attention					
2. Deliver the task direction to transition					
4. Begin timer					
5. Stop timer when transition complete					
6. Give child verbal praise & prompt to move picture to “finished” column					

Figure 7: Procedural Fidelity Form for Intervention Condition

Child Name:	1	2	3	4	5
1. Establish joint attention					
2. Deliver the task direction to transition					
3. Show the child the picture activity schedule for transition					
4. Begin timer					
5. If child does not begin the transition within 3 seconds, repeat verbal and visual cue					
6. If child refuses to transition or does not complete the transition within 1 minute, the teacher will use physical, verbal, and visual prompting until the transition is complete.					
7. Stop timer when transition complete					
8. Give child verbal praise & prompt to move picture to “finished” column					

Procedural reliability data were collected during 32 transitions, 16 in baseline and 16 in intervention. During baseline, procedural reliability was flawed because repeated cues were not noted on the reliability form therefore no data were collected on these cues. Overall reliability of the measured behaviors during baseline condition was 97.65%. The investigator reached 100% fidelity during baseline on all behaviors except establishing joint attention (87.5%) and delivering a follow-up verbal prompt after 3 seconds of refusal to transition (93.75%). The investigator did engage in follow-up prompting however it was later due to a distraction by another child.

The overall reliability during intervention was 98.44%. The investigator showed 100% fidelity on all behaviors except for establishing joint attention (87.5%).

Section 4: Results

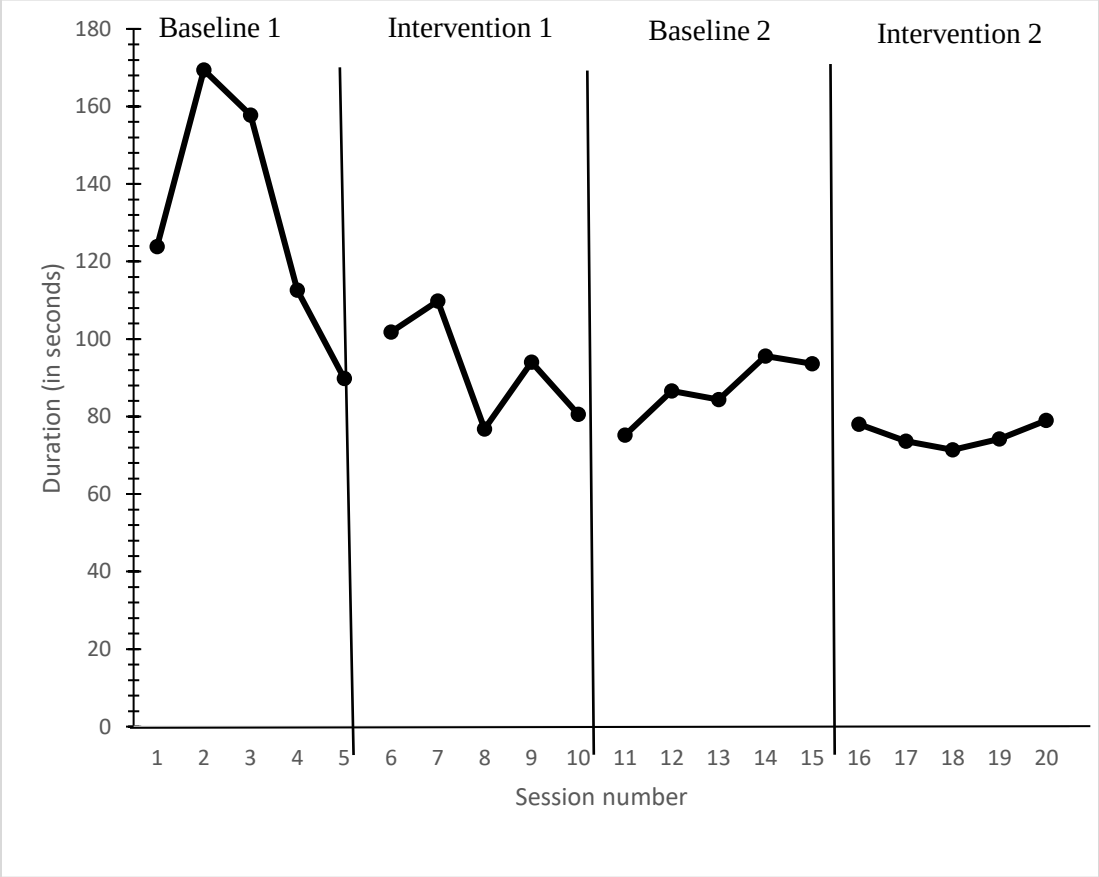
Levi: Participant 1.

Table 3 shows the results of both baseline and intervention conditions for Levi. Figure 8 graphs the results presented across phases (ABAB). During baseline, Levi showed a declining trend and data were not stable before introducing the intervention. The investigator introduced the intervention after five days regardless of what happened to the data to complete the study prior to the end of the school year. Levi continued to show a declining trend across all conditions. There was considerable overlap during all conditions and levels remained stable throughout the study. There was no immediacy of effect either upon introducing the intervention or withdrawing the intervention. Consequently, there was no consistency of effect.

Table 3: Mean Duration Data for Levi

Condition	Mean Duration (seconds)	Range (seconds)	Increase/Decrease from prior condition (+/-)
A1	130.68 s	27-401 s	n/a
B1	92.6 s	35-305 s	-38.08 s
A2	87.08 s	37-201 s	-5.32 s
B2	75.24 s	31-146 s	-11.84 s

Figure 8: Duration per Occurrence Average: Levi



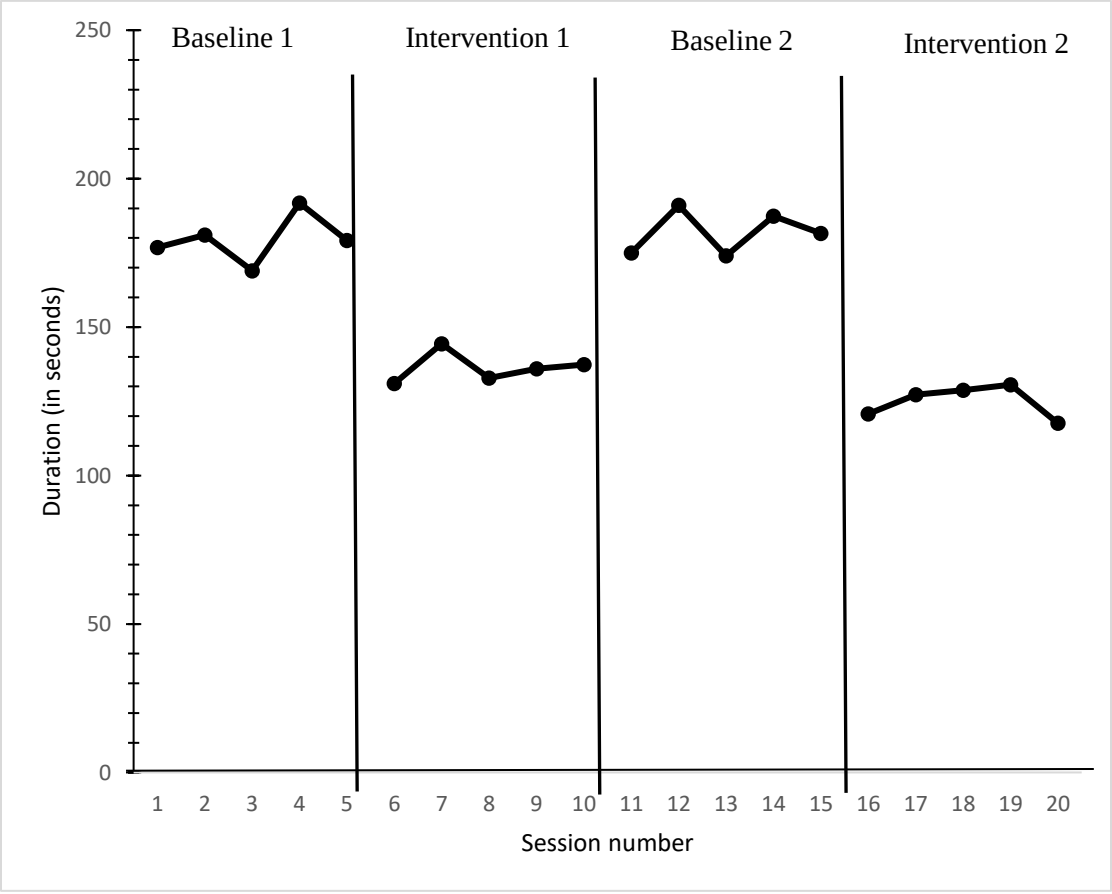
Eden: Participant 2.

Table 4 shows the results of both baseline and intervention conditions for Eden. Figure 9 graphs the results presented across phases (ABAB). During both baseline and intervention conditions, Eden showed stability in her levels. Her data showed an abrupt immediacy of effect once the intervention was introduced and she immediately returned to pre-intervention levels once the picture activity schedule was taken away. There was no overlap in data points in any of the conditions. Overall her data confirmed a therapeutic trend and experimental control was established. From beginning of study to the end of the end, Eden's mean transition time decreased by 54.56 s.

Table 4: Mean Duration Data for Eden

Condition	Mean Duration (seconds)	Range (seconds)	Increase/Decrease from prior condition (+/-)
A1	179.56 s	85-302 s	n/a
B1	136.32 s	47-201 s	-43.24 s
A2	181.80 s	82-252 s	+45.48 s
B2	125.00 s	45-195 s	-56.80 s

Figure 9: Duration per Occurrence Average: Eden



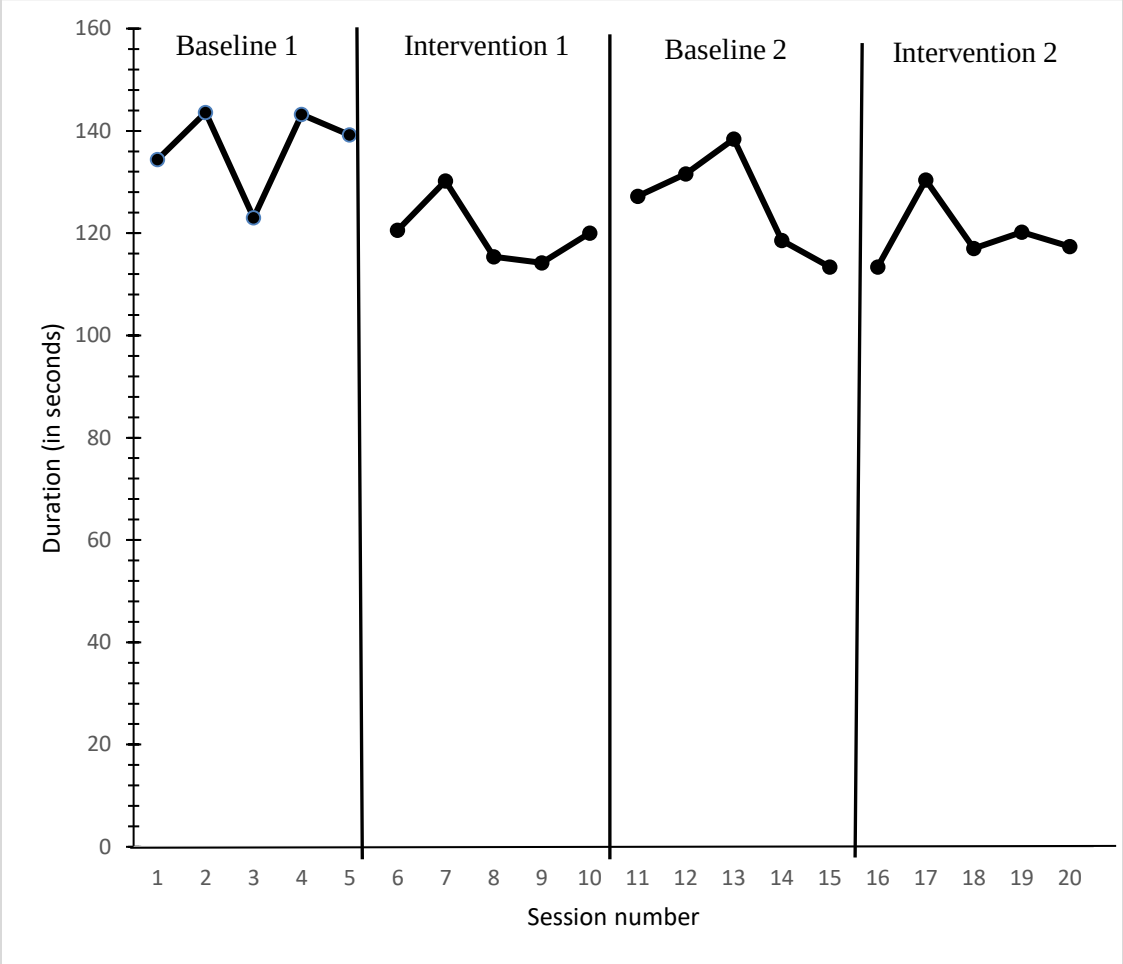
Scott: Participant 3.

Table 5 shows the results of both baseline and intervention conditions for Scott. Figure 10 graphs the results presented across phases (ABAB). Scott's data showed an overall therapeutic effect however there was considerable overlap across conditions. His levels were stable in each condition however there was no immediacy of effect once the intervention was introduced. Scott's transition times were consistent regardless of which phase of the study he was in which indicates that there was no consistency of effect.

Table 5: Mean Duration Data for Scott

Condition	**Mean Duration (seconds)**	**Range (seconds)**	**Increase/Decrease from prior condition (+/-)**
A1	136.68 s	81-301 s	n/a
B1	120.08 s	81-285 s	-16.60 s
A2	125.84 s	84-274 s	+5.76 s
B2	119.68 s	87-262 s	-6.16 s

Figure 10: Duration per Occurrence Average: Scott



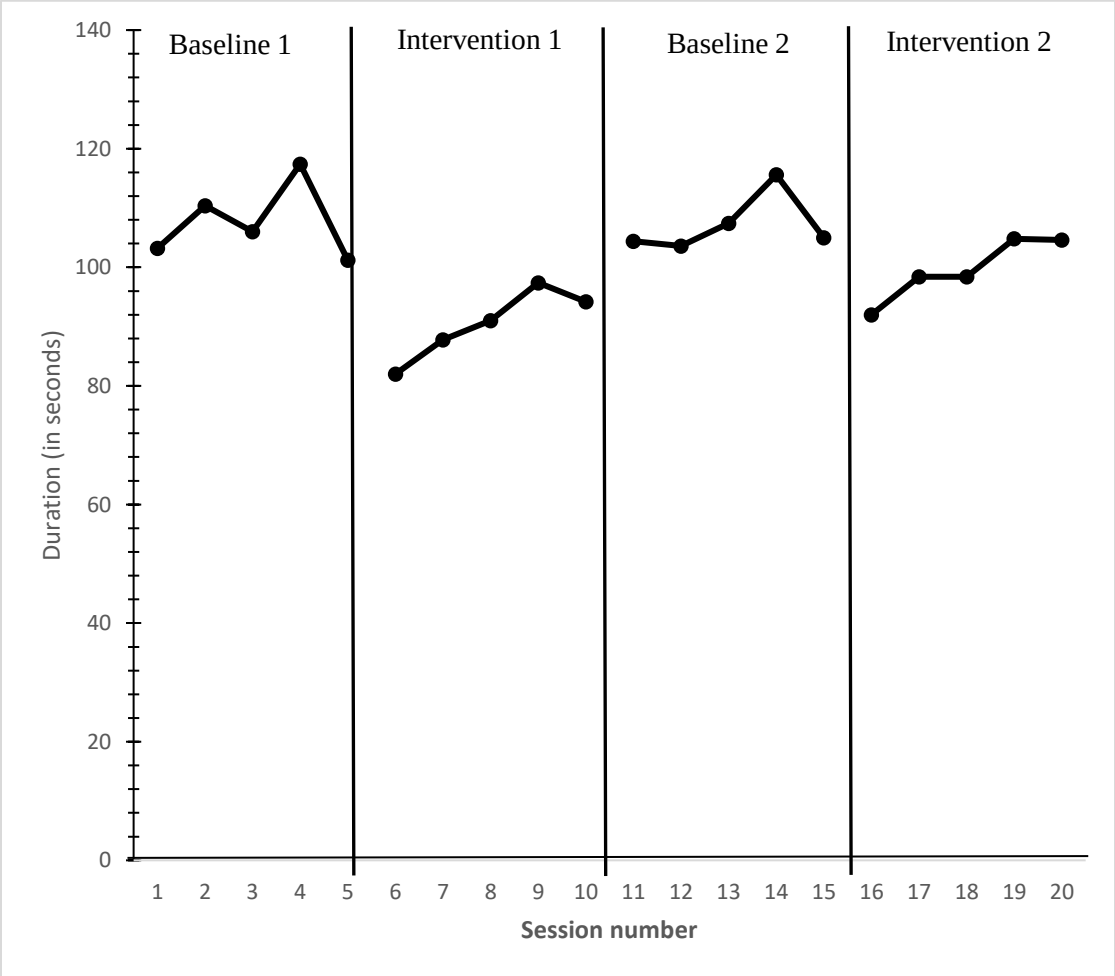
Lucas: Participant 4.

Table 6 shows the results of both baseline and intervention conditions for Lucas. Figure 11 graphs the results presented across phases (ABAB). During both baseline and intervention conditions, Lucas showed stability in his levels. When the intervention was introduced, a therapeutic trend was shown. There was some overlap in data points in the final intervention phase. Despite an increasing mean duration in the final intervention condition, the study ended due to the end of the school year. Overall his data confirmed a therapeutic trend and experimental control was established.

Table 6: Mean Duration Data for Lucas

Condition	Mean Duration (seconds)	Range (seconds)	Increase/Decrease from prior condition (+/-)
A1	107.64 s	72-166 s	n/a
B1	90.48 s	41-158 s	-17.16 s
A2	107.20 s	64-179 s	+16.72
B2	99.64 s	52-172 s	-7.56 s

Figure 11: Duration per Occurrence Average: Lucas



Section 5: Discussion

This research study attempted to answer the question: Is there a functional relation between the use of picture activity schedules and a decrease in the duration of transitions in preschoolers with and without developmental delays? The results of this study lent some support to previous studies which showed a decrease in duration once intervention consisting of a picture activity schedule was introduced. The study by Bryan and Gast (2000) reported that teachers stated their students became more independent when using a picture schedule and the participants in the study showed a reduction in disruptive behaviors. Dettmer et al (2000) found that the use of visual supports led to greater independence and a reduction in teacher-initiated verbal and physical cues during transitions.

Eden and Lucas both showed the most convincing demonstration of effect during the study. They both demonstrated a reduction in mean transition times when the picture activity schedule was used and an increase in duration upon the reintroduction of baseline conditions. Eden showed the largest decrease in her mean transition times from the beginning of the study to the end. Her mean transition time decreased by a total of 54.56 seconds. Lucas also showed a decrease in transition times across conditions. His change was not as dramatic as Eden's however he showed an immediate effect with the introduction of the intervention and a return to pre-intervention levels when the intervention was withdrawn.

Levi showed a decrease over all conditions and his transition times did not rebound to previous levels when the picture activity schedule was taken away. It is possible that due to Levi's high cognitive abilities and his strength in reading, the picture

activity schedule was too simplistic for him. A social story might have had a greater therapeutic effect for him. Scott also did not show a therapeutic effect from the intervention and showed considerable overlap across conditions. Scott is also a beginning reader and may have benefitted from a short social story. Both boys also consistently have difficulty moving from preferred activities, so a verbal warning and countdown timer could be added to the package of cues to prepare them for the transition.

The rationale for this study was to determine the effectiveness of picture activity schedule on children who were not diagnosed with autism. Two of the participants in this study gained therapeutic benefits from using the interventions and Eden's data showed solid validity. This proves that picture activity schedules should continue to be researched as a method for decreasing transition times in all children, not just those with autism.

Practical Implications

Long transition times during a half-day school day result in the loss of instructional time. Although the transition times look relatively short, there are many more than five transitions in a day. In this classroom, there are a total of 13 major and minor transitions during a three-hour session. If each transition takes two minutes, that would equate to 26 minutes of lost instructional time per session.

Another implication was that the picture activity schedules were used with only two children per preschool session (AM and PM). The use of an individual picture activity schedule was novel to most of the children in the class. There were several disruptions by those who were not involved in the study who also wanted to use a picture

schedule. These disruptions potentially caused the participants to take longer than they might have if the interruptions had not taken place.

Limitations

There were several limitations found within the study. The first limitation is that conditions were changed based on time rather than based on the student responding. This was based on time limitations for the study. There were only 20 class sessions left in the school year, so the investigator limited each phase to five sessions. It's possible that if each condition was changed when the children's data became stable, a therapeutic effect could have been shown for Levi and Scott.

A second limitation to the short amount of time was that there was no way to assess maintenance and generalization across all transitions during the day. All children were able to participate for all 20 sessions however, school dismissed for the summer the day after data collection was complete. If there would have been more time, the investigator could have collected data across more transitions to see if using a picture cue would work across settings, thus establishing a pattern of generalization.

The last limitation was the lack of procedural fidelity data taken on some steps of the baseline procedure. The investigator did not include the written steps for follow up cues if the child did not begin the transition within three minutes of the initial task direction. This lack of procedural fidelity led to no fidelity in the data for the baseline condition.

Future Research

Future research on this subject would be beneficial for teachers, parents, and other practitioners to try to prove that using picture cues in classrooms with and without children with disabilities would aid in the reduction of transition times, leading to an increase time spent on-task and focused. More time spent on-task and focused would lead to greater academic gains. The use of picture activity schedules could also increase independence in tasks as proven in the study by Dettmer et.al (2000) Future research should focus on determining how picture cues could help students of varying ages and abilities by providing visual reminders and cues in all types of environments where children struggle with comprehending and acting on verbal cues alone.

This study adds to current literature because there have not been any published studies that attempt to use picture activities schedules with children without delays in the case of Eden, or with only speech language and/or social-emotional delays who have not been given an autism spectrum diagnosis, in the cases of Levi, Scott and Lucas. This study showed that using picture activity schedules with these four children did decrease the average time it took for each child to make his or her transitions, although fidelity was only reached in the examples of Eden and Lucas. This study could be replicated in a variety of classroom settings with a range of children's ages and abilities to aid in reducing overall transition times in the classroom, which would then lead to an increase in time spent on-task.

Appendix A: Consent to Participate

Is there a functional relation between the use of picture activity schedules and a decrease in the duration of transitions in preschoolers with and without developmental delays?

WHY ARE YOU BEING INVITED TO TAKE PART IN THIS RESEARCH?

Your child is being invited to take part in a research study about using picture activity schedules to reduce the duration of transitions throughout the preschool day. Your child is being invited to take part in this research study because he/she is a student in the Principal Investigator's classroom. If you consent for your child to volunteer to take part in this study, your child will be one of about 4 children to do so.

WHO IS DOING THE STUDY?

The person in charge of this study is Elizabeth Reis (*Principal Investigator, PI*) a graduate student of the University of Kentucky Department of Special Education and Rehabilitation. She is being guided in this research by Dr. Jennifer Grisham-Brown *(Advisor)*.

WHAT IS THE PURPOSE OF THIS STUDY?

The purpose of this study is to determine if using picture schedules will reduce the amount of time it takes to make transitions in a classroom setting.

ARE THERE REASONS WHY YOU SHOULD NOT TAKE PART IN THIS STUDY?

Your child should not take part in this study if you do not want him/her to reduce the amount of time it takes to transition in a classroom setting.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?

The research procedures will be conducted during the school day at Oldham County Preschool.

WHAT WILL YOUR CHILD BE ASKED TO DO?

Your child will use a picture schedule made specifically for his/her use in order to know exactly what is coming up next in the daily schedule. When it is time to transition, your

child will look at his/her schedule as a cue to stop what he/she is doing and begin the transition.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

The possible risks and discomforts when participating in this study are not greater than what would be encountered in everyday life.

WILL YOU BENEFIT FROM TAKING PART IN THIS STUDY?

Your child might transition more easily as a result of this study.

DO YOU HAVE TO TAKE PART IN THE STUDY?

If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering. Your choice will have no effect on your child's academic status or grade in the class.

IF YOU DON'T WANT TO TAKE PART IN THE STUDY, ARE THERE OTHER CHOICES?

If you do not want to be in the study, there are no other choices except not to take part in the study.

WHAT WILL IT COST YOU TO PARTICIPATE?

There are no costs associated with taking part in the study.

WILL YOU RECEIVE ANY REWARDS FOR TAKING PART IN THIS STUDY?

You will not receive any rewards or payment for taking part in the study.

WHO WILL SEE THE INFORMATION THAT YOU GIVE?

We will make every effort to keep private all research records that identify you to the extent allowed by law.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be personally identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. Records including any identifying information will be kept in a locked fireproof box for an appropriate number of years in accordance with university policies.

We will keep private all research records that identify you to the extent allowed by law. However, there are some circumstances in which we may have to show your information to other people. For example, we may be required to show information which identifies you to people who need to be sure we have done the research correctly; these would be people from such organizations as the University of Kentucky.

CAN YOUR TAKING PART IN THE STUDY END EARLY?

If you decide to take part in the study, you still have the right to decide at any time that you no longer want to continue. You will not be treated differently if you decide to stop taking part in the study.

ARE YOU PARTICIPATING, OR CAN YOU PARTICIPATE IN ANOTHER RESEARCH STUDY AT THE SAME TIME AS PARTICIPATING IN THIS ONE?

You may take part in this study if you are currently involved in another research study. It is important to let the investigator know if you are in another research study. You should also discuss with the investigator before you agree to participate in another research study while you are enrolled in this study.

WHAT IF YOU HAVE QUESTIONS, SUGGESTIONS, CONCERNS, OR COMPLAINTS?

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions, suggestions, concerns, or complaints about the study, you can contact the investigator, Elizabeth Reis at elizabeth.ray@uky.edu. If you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky at 859-257-9428 or toll free at 1-866-400-9428. We will give you a signed copy of this consent form to take with you.

_____ _____

Signature of person agreeing to take part in the study Date

_____

Printed name of person agreeing to take part in the study

_____ _____

Name of [authorized] person obtaining informed consent Date

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